REMARKS/ARGUMENTS

The claims are 2-8 and 14-15. Claims 9 and 13 have been canceled and redrafted respectively as new claims 15 and 14 to define the invention more clearly. Accordingly, claims 2-8 have been amended to depend on new claim 14 and to improve their form. Support for the claims may be found, inter alia, in the disclosure at page 8, line 18 through page 11, line 22 and FIGS. 1-2. Reconsideration is expressly requested.

(I) Regarding the Interview and the Amended Claims

Applicants wish to thank the Examiner for the courtesy of an interview on October 19, 2005, the substance of which is set forth in the Interview Summary dated October 19, 2005 and herein.

In the Office Action dated June 9, 2005, the Examiner rejected claims 2-9 and 13 under 35 USC 112 as failing to comply with the written description requirement. More specifically, the Examiner rejected the claims as containing subject matter which was not described in the specification, and also as being indefinite due to the use of the phrase "regarding N pieces of said pixel data . . ." in claims 9 and 13.

At the Interview, a proposed new claim 14 was discussed which is substantially set forth herein except that new claim 14 herein uses the terminology "pixel data set" in place of "pixel" for clarity purposes. The proposed new claim 14 was discussed along with the attached Exhibit I for purposes of explaining that new claim 14 contained no new matter and for distinguishing new claim 14 from U.S. Patent No. 6,661,429 B1 to Phan, and from EP 0869468 A2 to Tokimoto et al (included in an IDS filed October 12, 2005; referred to below as "Tokimoto"). The Examiner indicated that the proposed new claim 14, with minor modifications, would overcome the previous 112 rejection and appeared to distinguish the claim from Phan and Tokimoto.

Accordingly, Applicants have revised the proposed claim as set forth herein as new claim 14. New claim 15 has also been added directed to a display apparatus which contains corresponding terminology. Claims 2-8 have been amended for consistency with new claim 14. Applicants respectfully submit that the currently pending claims are fully supported by the original disclosure and are patentable over Phan and Tokimoto for the reasons set forth below.

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The configuration of new claims 15 and 14, as well as the

fact that no new matter has been added, are explained in detail below with reference to pages 1 through 3 of EXHIBIT I.

First, reference is made to page 1 of the EXHIBIT I. Page 1 of EXHIBIT I uses Fig. 1 and Fig. 2 of the present English Drawings as its basis, and depicts, in color, the section "Correspondence of image data and a pixel lamp" described on page 8 line 18 through page 10 line 20 of the present English Specification, and the first generalization method of the section "Local portion and entire body" described on page 10 line 27 through page 11 line 9 of the present English Specification.

As described in the present English Specification and shown on page 1 of EXHIBIT I, a group of pixels or pixel data sets 33, 34, 43, and 44 (the red solid-line box in the right-hand figures of EXHIBIT I page 1; an example of a "first color group that is made up of a predetermined number of pixel data sets among said plurality of pixel data sets in said image data" in the claims) is correlated to R lamp 33 (an example of a "first color lamp"), whose position corresponds to the position, in the image data, of the pixel data set group 33, 34, 43, and 44. Likewise:

- a group of pixel data sets 34, 35, 44, and 45 (the dark-green solid-line box in the right-hand figures of EXHIBIT I, page 1; an example of a "second color group that is made up of a predetermined number of pixel data sets among

said plurality of pixel data sets in said image data" in the claims) is correlated to G lamp 34 (an example of a "second color lamp"), whose position corresponds to the position, in the image data, of the pixel data set group 34, 35, 44, and 45;

- a group of pixel data sets 43, 44, 53, and 54 (the light-green solid-line box in the right-hand figures of EXHIBIT I, page 1; also an example of a "second color group" in the claims) is correlated to G lamp 43 (also an example of a "second color lamp"), whose position corresponds to the position, in the image data, of the pixel data set group 43, 44, 53, and 54; and

- a group of pixel data sets 44, 45, 54, and 55 (the blue solid-line box in the right-hand figures of EXHIBIT I, page 1; an example of a "third color group that is made up of a predetermined number of pixel data sets among said plurality of pixel data sets in said image data" in the claims) is correlated to B lamp 44 (an example of a "third color lamp"), whose position corresponds to the position, in the image data, of the pixel data set group 44, 45, 54, and 55.

Further, as described in the first generalization method of the "Local portion and entire body" on page 10 line 27 through page 11 line 9 of the present English Specification, a group of

pixel data sets 35, 36, 45, and 46 (the red dashed-line box in the right-hand figures of EXHIBIT I, page 1; also an example of a "first color group" in the claims) is correlated to R lamp 35 (also an example of a "first color lamp"), whose position corresponds to the position, in the image data, of the pixel data set group 35, 36, 45, and 46. Likewise:

- a group of pixels 36, 37, 46, and 47 (the dark-green dashed-line box in the right-hand figures of EXHIBIT I, page 1; also an example of a "second color group" in the claims) is correlated to G lamp 36 (also an example of a "second color lamp", whose position corresponds to the position, in the image data, of the pixel data set group 36, 37, 46, and 47;

- a group of pixel data sets 45, 46, 55, and 56 (the light-green dashed-line box in the right-hand figures of EXHIBIT I, page 1; also an example of a "second color group" in the claims) is correlated to G lamp 45 (also an example of a "second color lamp"), whose position corresponds to the position, in the image data, of the pixel data set group 45, 46, 55, and 56;

- a group of pixel data sets 46, 47, 56, and 57 (the blue dashed-line box in the right-hand figures of EXHIBIT I, page 1; also an example of a "third color group" in the claims) is correlated to B lamp 46 (also an example of a "third color lamp"), whose position corresponds to the

position, in the image data, of the pixel data set group 46, 47, 56, and 57;

- a group of pixel data sets 53, 54, 63, and 64 (the red long-short-dashed-line box in the right-hand figures of EXHIBIT I, page 1; also an example of a "first color group" in the claims) is correlated to R lamp 53 (also an example of a "first color lamp"), whose position corresponds to the position, in the image data, of the pixel data set group 53, 54, 63, and 64;

and this correlation is performed for all of the lamps and pixel data sets based on the first generalization method described on page 10 line 27 through page 11 line 9 of the present English Specification.

Then, the selecting and lighting-up step is performed for each of the pixel data set groups and the corresponding lamps. That is, in the example described on page 8 line 18 through page 10 line 20 of the present English Specification, from the pixel data set group 33, 34, 43, and 44 (i.e., the red solid-line group), a pixel data set is sequentially selected in the order of 33→34→44→43, and the red data (an example of a "first color data" in the claims) in each selected pixel data set is used to light up the corresponding R lamp 33 in the order r33→r34→r44→r43. Likewise:

- from the pixel data set group 34, 35, 44, and 45

(i.e., the dark-green solid-line group), a pixel data set is sequentially selected in the order of 34→35→45→44, and the green data (an example of a "second color data" in the claims) in each selected pixel data set is used to light up the corresponding G lamp 34 in the order g34→g35→g45→g44;

- from the pixel data set group 43, 44, 53, and 54 (i.e., the light-green solid-line group), a pixel data set is sequentially selected in the order of 43→44→54→53, and the green data (also an example of a "second color data" in the claims) in each selected pixel data set is used to light up the corresponding G lamp 43 in the order g43→g44→g54→g53;

- from the pixel data set group 44, 45, 54, and 55 (i.e., the blue solid-line group), a pixel data set is sequentially selected in the order of 44→45→55→54, and the blue data (an example of a "third color data" in the claims) in each selected pixel data set is used to light up the corresponding B lamp 44 in the order b44→b45→b55→b54;

and this selection and lighting-up is performed for all of the lamps and groups.

Page 1 of EXHIBIT I shows this selection and lighting-up process in time sequence. "TIMING 1" shows the timing at which r33, g34, g43, b44 (as well as r35, g36, g45, b46, r53...; in other words, the upper-left pixel data set in each pixel data set group)

are used to light up the corresponding color lamps R33, G34, G43, B44 (as well as R35, G36, G45, B46, R53...). Likewise, "TIMING 2" shows the timing at which r34, g35, g44, b45 (as well as r36, g37, g46, b47, r54...; in other words, the upper-right pixel data set in each pixel data set group) are used to light up the corresponding color lamps R33, G34, G43, B44 (as well as R35, G36, G45, B46, R53. Likewise, "TIMING 3" shows the timing at which r44, g45, g54, b55 (as well as r46, g47, g56, b57, r64...; in other words, the lower-right pixel data set in each pixel data set group) are used to light up the corresponding color lamps R33, G34, G43, B44 (as well as R35, G36, G45, B46, R53...). Further, although not depicted on page 1 of EXHIBIT I, at TIMING 4, the lower-left pixel data sets in each pixel data set group are used to light up the corresponding color lamps. And this process is repeated.

As apparent from the description above, it is clear that the figures shown on page 1 of EXHIBIT I involve no new matter and are within the scope of the original disclosure. Further, from the figures on page 1 of EXHIBIT I, it is clear that, *at each timing for causing the lamps to light up, each of the R, G, and B lamps (i.e., each of the first, second, and third color lamps) is caused to emit light based on a different pixel data set*, as claimed in claims 15 and 14. Thus, it can be stated that new claims 15 and 14 do not involve any new matter and are clearly within the scope of the original disclosure.

Page 2 of EXHIBIT I shows another example of the present invention, in which each color group includes 3 x 3 = 9 pixel data sets and in which the correspondence between each color group and each lamp is performed according to the second generalization method described on page 11 lines 10-22 of the present English Specification. This example shown on page 2 of EXHIBIT I also falls within the scope of new claims 15 and 14, since it fulfills the condition: "*at each timing for causing the lamps to light up, each of the R, G, and B lamps (i.e., each of the first, second, and third color lamps) is caused to emit light based on a different pixel* data set".

Page 3 of EXHIBIT I shows a simplified example of the present invention.

As described above, according to new claims 15 and 14, *at each timing for causing the lamps to light up, each of the first, second, and third color lamps is caused to emit light based on a different pixel data set*. This configuration is advantageous in that, not only is it possible to display image data having a larger number of pixel data sets compared to the number of pixels on the display screen, *it is possible to perform displaying using a large number of pixel data sets at each timing of lighting up the lamps*. In the examples shown on pages 1 through 3 of EXHIBIT I, it can be

acknowledged that, *at each light-up timing, all of the pixel data sets can be used to light up the lamps, without the need to thin-out any data*. This will apparently result in a finer image displayed on the display screen.

(II) Differences among Present Invention, Phan, Tokimoto

(A) Regarding Phan

As the Applicant has been arguing repeatedly throughout the prosecution of this application, Phan discloses nothing about how to correlate the image data (pixel data) to the dots (pixels) on the display.

Indeed, Phan discloses that a greater optical resolution in a given grid pattern can be achieved by generating the pixels dynamically, and by employing these logical "dynamic pixels 18", the resolution of the display is increased by P = (x - 1) * y + (2x - 1) * (y - 1) (column 3 lines 11-17 of Phan), and thus the resolution of the display of Fig. 2a or Fig. 2b, which originally has only 9 "static" pixels, can be increased to 25 instead of 9 (column 3 lines 22-23 of Phan).

However, as stated above, Phan discloses only how to arrange these virtual "dynamic pixels 18" on a display using the actual

dots 11 (13, 14, 15), but discloses nothing about the image data that is to be supplied to the display nor about how to correlate the image data (pixel data) to the dots (pixels) on the display.

Although Phan discloses nothing about the image data (pixel data) and how to correlate them to the dots (pixels) on the display, the Applicant assumes that, from the information given in Phan, the way in which Phan correlates the data to the dots should be as shown on page 4 of EXHIBIT I.

On page 4 of EXHIBIT I, the figures on the left show the "display". This display includes four static pixels 17 (two (2) in the horizontal direction and two (2) in the vertical direction), and each static pixel 17 includes four "dots" (one R dot, two G dots, and one B dot), which correspond to the "first, second, and third color lamps" of the present application.

On the other hand, the figures on the right show the assumed "image data". Phan discloses that the number of increased resolution ("pixel data" (which is called "pixel data sets" in new claims 14 and 15 of the present application)) is obtained by the following equation:

$$P = (x - 1) * y + (2x - 1) * (y - 1)$$

Since the display on page 4 of EXHIBIT I includes x = 2 horizontal pixels and y = 2 vertical pixels, the increased number of pixel data is:

$$P = (2 - 1) * 2 + (2*2 - 1) * (2 - 1)$$

$$\rightarrow \quad P = 1 * 2 + 3 * 1$$

$$\rightarrow \quad P = 5,$$

and thus, the "image data" in the figures on the right is shown to include 4 + 5 = 9 pixel data.

Furthermore, it is inevitable that the nine (9) pieces of pixel data are supplied to the display at different timings (at TIMINGS 1-4 as shown on page 4 of EXHIBIT I) to achieve the total of nine (9) pixels (four (4) static pixels 17 + five (5) dynamic pixels 18). This is because a single dot ("Color lamp") on the display cannot be driven by a plurality of different pixel data at the same time.

From the figures shown on page 4 of EXHIBIT I, it can be appreciated that, at each light-up timing, one pixel data is correlated to one pixel on the display (either the static pixel 17 or the dynamic pixel 18 depending on the timing), and thus, the RGB data included in a single pixel data is supplied to the RGB dots included in a single pixel. This means that, at each light-up timing, the RGB dots (the "first, second, and third color lamps" of

the present application) in each of the pixels on the display are caused to light up based on the **same** pixel data ("pixel data sets" in the present application). For example, at TIMING 1, the R dot 1, the G dot 2, and the B dot 1 of the upper-left static pixel 17 in the display are all driven by the same, upper-left pixel data #1. This configuration of *Phan is manifestly different from claims 15 and 14 of the present application in which at each timing for causing the lamps to light up, each of the first, second, and third color lamps is caused to emit light based on a* ***different*** *pixel data set*.

As described above, Phan is configured such that the RGB dots ("first, second, and third color lamps") in a single pixel on the display are caused to light up based on the single pixel data corresponding to that pixel. For example, at TIMING 1, the RGB dots in the four (4) static pixels 17 will be driven to light up based on four (4) of the pixel data. This means that the rest of the pixel data (five (5) pixel data) will not be used at that timing. In other words, as shown on page 4 of EXHIBIT I, it is inevitable that Phan will need to perform thinning-out of data at each light-up timing. Therefore, at each light-up timing, the number of pixel data that can be used for lighting up the dots in Phan is smaller compared to the present invention, which uses different pixel data ("pixel data sets" in the present claims) for all of the dots ("lamps" in the present claims).

On the other hand, the present invention according to new claims 15 and 14 is superior to Phan in that the configuration of being able to *drive all the lamps ("dots" in Phan) based on* ***different*** *pixel data sets ("pixel data" in Phan)* results in *a finer image being displayed on the display at each light-up timing, without the need to perform thinning-out of data at all*. Applicants therefore believe that the invention according to new claims 15 and 14 has novelty and is non-obvious over Phan, and that the same is true for the dependent claims 2-8.

(B) Regarding Tokimoto

Applicants have filed on October 12, 2005 an IDS including EP 0869468 A2 ("Tokimoto"). Tokimoto relates to a technique on how to correlate pixel data to the lamps provided on a display. Page 5 of EXHIBIT I shows, in color, how Tokimoto correlates the pixel data to the lamps. In Tokimoto, for example, twenty-five (25) pixel data are grouped together and correlated to a single corresponding lamp which includes RGB lamp elements (the lamp elements are the "first, second, and third color lamps" of the present application). At each timing, one of the twenty-five (25) pixel data is sequentially used to light up the RGB lamp elements included in the corresponding lamp.

That is, like Phan, Tokimoto merely discloses a configuration in which the RGB lamp elements (the "first, second, and third color lamps" of the present application) in each lamp on the display are caused to light up based on the **same single pixel data** corresponding to that lamp at each timing. This configuration of *Tokimoto is manifestly different from claims 15 and 14 of the present application in which at each timing for causing the lamps to light up, each of the first, second, and third color lamps is caused to emit light based on a* ***different*** *pixel data set*. Further, it can be appreciated that, as shown on page 5 of EXHIBIT I, it is inevitable that Tokimoto will need to perform thinning-out of data at each light-up timing.

Applicants therefore believe that the invention according to new claims 15 and 14 has novelty and is non-obvious over Tokimoto, and that the same is true for the dependent claims 2-8.

(C) Combination of Phan and Tokimoto

It is apparent that a mere combination of Phan and Tokimoto would not result in the configuration of new claims 15 and 14. Applicants believe that new claims 15 and 14, as well as the dependent claims 2-8, are patentable also in this sense.

(III) Conclusion

In summary, claims 2-8 have been amended, claims 9 and 13 have been canceled, and new claims 14 and 15 have been added. Applicants believe that all of the rejections raised in the Office Action have been addressed. In view of the foregoing, it is respectfully requested that the claims be allowed and that this application be passed to issue.

Respectfully Submitted,
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Copy of Petition for two-month Extension of Time.

I hereby certify that this correspondence is being deposited with the U.S. Postal Service as first class mail in an envelope addressed to: Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on November 4, 2005.

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